MINUTES

INSTALLATION RESTORATION PROGRAM

RESTORATION ADVISORY BOARD MEETING

ABERDEEN PROVING GROUND, MARYLAND

THURSDAY, 24 APRIL 2003

7:00 p.m. – 9:45 p.m.

EDGEWOOD SENIOR CENTER

RESTORATION ADVISORY BOARD MEMBERS PRESENT AT THIS MEETING:

Mr. Kevin Barnaba
Mr. Roy Dietz
Ms. Christine Grochowski (Community Co-Chair)
Mr. Greg Kappler
Mr. Karl Kalbacher (Maryland Department of the Environment)
Mr. Ken Stachiw (Army Co-Chair)
Mr. Frank Vavra (U.S. Environmental Protection Agency)
Mr. Dennis Warwick
Ms. Ruth Ann Young

RESTORATION ADVISORY BOARD MEMBERS NOT PRESENT AT THIS MEETING:

Dr. Nasrin Begum
Ms. Glenda Bowling
Mr. Arlen Crabb
Ms. Mandi Elliott-Bird
Mr. Ted Henry
Ms. Loretta McCullah
Mr. Thomas McWilliams, Jr.
Mr. Dan Pazdersky
Mr. Doug Richmond (Harford County Emergency Operations Center)

ENCLOSURES TO THESE MINUTES:

1: Roster of Meeting Attendees
2: Agenda
3: May 2003 Calendar of Events
4: Unexploded Ordnance (UXO) Incident Reports
5: Perchlorate Detections Presentation Materials
6: Explosive Destruction System (EDS) Update Presentation Materials
7: Canal Creek Study Area Update Presentation Materials
8: Operations Security (OPSEC) Handout

I. EXECUTIVE SUMMARY

Administrative Comments

Mr. Ken Stachiw (Chief, Directorate of Safety, Health and Environment (DSHE) Environmental Conservation and Restoration Division (ECRD)) announced a tour of the Canal Creek Groundwater Treatment Plant and annual RAB budget meeting will be held on either 7 May or 14 May 2003. The RAB Members will be polled to determine the preferable date. Mr. Stachiw stated that waste was discovered along the Kings Creek shoreline in the Bush River Study Area. A time-critical removal action will be completed to remove the waste. Additional details pertaining to the removal action will be provided at the 29 May 2003 RAB meeting.

Perchlorate Detections Update

Mr. Stachiw provided an update on the perchlorate detections. The 15 April 2003 sampling of the City of Aberdeen production (CAP) wells detected perchlorate at 1.5 parts per billion (ppb) in CAP well 3. The remaining CAP wells had detections below the reporting limit of 1 ppb, with detected concentrations ranging from 0.18J to 0.53J ppb. Perchlorate sampling was completed on 16 March 2003 for the Harford County production wells. All wells had perchlorate concentrations below the reporting limit of 1 ppb, with detected concentrations ranging from 0.23J to 0.31J ppb. A meeting with Harford County officials is scheduled for 14 May 2003 to address the perchlorate detections in the Harford County wells.

Lauderick Creek Chemical Warfare Materiel (CWM) Removal Action Update

Mr. Billy Sanders (U.S. Army Corps of Engineers (USACE) Environmental Remediation Resident Office (ERRO)) provided an update regarding the Lauderick Creek CWM Removal Action. A total of 16,324 anomalies have been identified, with 487 anomalies identified since the 27 March 2003 RAB meeting. Six 4.2" and one 81-millimeter (mm) mortars were investigated since the March RAB meeting. A total of 535 grids have been completed, with 16 grids completed since the March RAB meeting. An updated Summary of Liquid Filled Munitions from the Lauderick Creek CWM Removal Action project was provided. Several items are awaiting destruction and six liquid-filled munitions are awaiting assessment.

Explosive Destruction System (EDS) Update

Mr. Robert Carestia (EDS System Manager, Non-Stockpile Chemical Materiel (NSCM)) provided an update on the EDS. Three EDS systems are currently operational including the EDS Phase 1 Unit 1 and EDS Phase 1 Units 2 and 3. Phase 1 Unit 1, the first EDS produced by Sandia National Labs for the NSCM program, completed intensive developmental and operational testing in 2000. The EDS Phase 1 Units 2 and 3, which are identical in configuration, represent improvements on the Phase 1 Unit1 system. One of the major differences between these twin units and the earlier Unit 1 is their rotational mixing configuration. Phase 1 Unit 1 employed an oscillating or rocking mixing configuration.

The Phase 1 Units 2 and 3 underwent operational testing at APG during the Spring and Summer of 2002, destroying a total of 11 munitions. Based on the units' early success, the Army Materiel Systems Analysis Activity (AMSAA), an independent evaluator in the EDS acquisition program, granted all phase I EDS units (i.e, Units 1, 2 & 3) provisional operational status in the Fall of 2002. As a means of ensuring adequate crew training and the long-term reliability and supportability of the EDS, the AMSAA mandated Follow-on Test and Evaluation (FOT&E) of the Phase 1 units 2 and 3.

In December 2002, Phase 1 Unit 2 was used to destroy an unstable, suspect chemical munition at APG. Between February and late April 2003, EDS Phase 1 Unit 2 completed a major portion of

required FOT&E destroying all 18 suspect chemical munitions in APG's current recovered chemical weapon inventory.

The EDS Phase 1 Unit 2 or 3 will next be deployed to Spring Valley in Washington, D.C. for destruction operations in support of Corps of Engineer chemical warfare material removal operations. The EDS Phase 2 Unit 1, a larger version of the Phase 1 systems, is currently undergoing testing in the United Kingdom. The Phase 2 Unit 1 will be moved to APG during the late summer of 2003 for some additional testing after which the unit should be also approved for operational use.

Canal Creek Study Area Update

East Branch Canal Creek Study Area

Mr. John Wrobel (DSHE ECRD Project Officer) provided an update on the Canal Creek Study Area. The groundwater treatment plant (GWTP) is designed to meet drinking water standards. The plant has the capacity to treat about 440,000 gallons of water per day. The long-term goal is to incorporate the GWTP effluent as part of the Edgewood Area drinking water system. The GWTP and extraction system was started in April 2003. Short-term monitoring of the extraction system will be initiated in May 2003 to collect regular water levels to monitor the hydraulic containment of the plume. The first biannual sampling of the monitoring wells surrounding the extraction wells will be conducted in July 2003. An evaluation of the start-up and short-term monitoring data will be completed from July to December 2003 to develop a comprehensive long-term monitoring plan. A second biannual sampling event will be conducted in January 2004, with implementation of the long-term monitoring plan being conducted in March and April 2004. Through the Army's Sustainable Project Rating Tool (SPiRiT) Project, the Canal Creek GWTP is eligible for gold certification.

West Branch Canal Creek Study Area

A 2002 investigation of shallow groundwater seeps in the West Branch of Canal Creek characterized a total of 28 seep sites in four regions. The temperature gradient was verified, and the shallow groundwater was sampled using passive diffusion samplers. Surface water samples were also collected at each groundwater sampling location. The samples were analyzed for Volatile Organic Compounds (VOCs) and methane. The Spring 2002 sampling results detected several VOCs including vinyl chloride, trans-1,2-dichloroethene, 1,1,2,2-tetrachloroethane, cis-1,2-dichloroethene, 1,2-dichloroethane, chloroform, carbon tetrachloride, tetrachloroethene, trichloroethene, and methylene chloride. An enhanced bioremediation study will be completed for the West Branch Canal Creek Study Area using bench tests to determine the best combination of biostimulation and bioaugmentation techniques or degradation of VOCs. Under the enhanced bioremediation study, field tests of potential seep treatments will be completed in fiscal year (FY) 2004 and 2005.

The Environmental Protection Agency (EPA) Environmental Response Team (ERT) is conducting an ecological risk assessment (ERA) for the Canal Creek sediments. A total of 85 samples were collected in October 2002 including fish tissue samples from 15 locations (1,215 fish), 38 sediment samples, 26 surface water samples, and six soil samples. The toxicity tests failed due to failure of the control sample organisms. The toxicity tests are being repeated at the cost of the laboratory.

G-Street Salvage Yard, Railroad Yard, DM Filling Plant

Previous removal actions and investigations at the three sites included a 1990 removal action, 1991 fence installation, 1996 emergency measures action, and a 1998 geophysical survey. Planned activities for FY03 at G-Street include completion of a ground penetrating radar survey, and an Engineering Evaluation/Cost Analysis (EE/CA) and public comment period. Upon approval of the EE/CA, field activities will begin on the west face of the Burn Residue Disposal Area (BRDA). Planned activities for FY04 include completion of the investigative activities at the west face of the BRDA.

Building E5185

Building E5185 was historically used as a WWII mustard munition filling plant. Historically, 20,000-gallon steel tanks were believed to reside below the building in a concrete vault. A 5,000-gallon liquid level tank was identified on a drawing of the building. Infrared thermographic investigation techniques were used on site and determined the likely presence of two tanks. A tank investigation was completed in October 2002. Results of the investigation did not find any tanks below the building, all checks for CWM were negative, and one unknown tank was located during the investigation. The tank was determined to be a condensate tank and was removed.

Building 99

Test pits confirmed that underground vaults do not exist at Building 99. Installation of seven direct push technology wells is in progress at various locations across the Building 99 site. Existing monitoring wells will be sampled for pentaerythritol tetranitrate (PETN).

Planned FY03 activities for the Canal Creek Study Area include the start-up of the East Branch GWTP, additional remedial investigation at Building 99, a biomat evaluation at the West Branch Canal Creek, additional sampling of West Branch sediments, continued monitoring at Building 103 and Beach Point, potential removal action at the BRDA, and award of Remedial Investigation/Feasibility Study for the Building E5188 Area.

Operations Security (OPSEC) Procedures Discussion

Mr. Joe Kaffl (OPSEC) provided RAB Members with a copy of the new OPSEC-approved base map. The map incorporated requests from the RAB Members to include railroad lines, off-post housing communities, North/South designation, and map scale. A discussion was held to allow RAB Members to make further requests for additional information to be included on the map. Mr. Stachiw led a discussion to gather RAB Member input regarding Mr. Ted Henry's 3-tiered approach to OPSEC issues. Mr. Stachiw encouraged all Members to review the information and provide feedback to him.

II. OPENING REMARKS AND ADMINISTRATIVE COMMENTS

The April 2003 U.S. Army Garrison Aberdeen Proving Ground (APG) Installation Restoration Program (IRP) Restoration Advisory Board (RAB) meeting was called to order by Mr. Kenneth Stachiw (Chief, Directorate of Safety, Health and Environment (DSHE) Environmental Conservation and Restoration Division (ECRD); Army Co-Chair) at 7:00 p.m. on Thursday, 24 April 2003. The meeting took place at the Edgewood Senior Center located at 1000 Gateway Road in Edgewood, Maryland.

Enclosure 1 to these minutes is a meeting attendance list. RAB Members in attendance received an agenda (Enclosure 2), a RAB calendar of events for May 2003 (Enclosure 3), Unexploded Ordnance (UXO) Incident Reports (Enclosure 4), a copy of the Perchlorate Detections presentation, (Enclosure 5), a copy of the Explosive Destruction System (EDS) Update presentation (Enclosure 6), a copy of the Canal Creek Study Area Update presentation (Enclosure 7), and a copy of the Operations Security (OPSEC) handout (Enclosure 8).

Mr. Stachiw announced that a tour of the Canal Creek Groundwater Treatment Plant and annual RAB budget meeting will be held in the evening on either 7 May or 14 May 2003. The RAB Members will be polled to determine the preferable date.

After confirming the RAB Members had no further comments, Mr. Stachiw provided an update on the perchlorate detections.

III. PERCHLORATE DETECTIONS UPDATE

Mr. Stachiw reported that the 15 April 2003 sampling of the City of Aberdeen production (CAP) wells detected perchlorate at 1.5 parts per billion (ppb) in CAP well 3. The remaining CAP wells had detections below the reporting limit of 1 ppb, with detected concentrations ranging from 0.18J to 0.53J ppb.

Dr. Cal Baier-Anderson (Technical Assistance Grant (TAG) Consultant) asked if any of the CAP wells were not operational during the sampling event. Mr. Stachiw stated that he was unsure of the operational status of the CAP wells, but the information would be obtained and forwarded to the RAB Members. Dr. Baier-Anderson requested that maps be displayed during future updates on perchlorate detections. The maps should include information regarding the current status of the wells (i.e. which wells are operational). Mr. Stachiw stated that maps will be used during future updates on perchlorate detections.

Ms. Ruth Ann Young (RAB Member) requested a copy of the slide displayed by Mr. Stachiw that details the perchlorate detections in the CAP wells and Harford County wells. Mr. Stachiw responded that a copy of the slide would be distributed to the RAB Members with the April 2003 meeting minutes.

Mr. Stachiw informed the RAB Members that perchlorate sampling was completed on 16 March 2003 for the Harford County production wells. All wells had perchlorate concentrations below the reporting limit of 1 ppb, with detected concentrations ranging from 0.23J to 0.31J ppb. A meeting with Harford County officials is scheduled for 14 May 2003 to address the perchlorate detections in the Harford County wells.

Ms. Young asked if the 14 May 2003 meeting regarding perchlorate will be solely with Harford County officials. Mr. Stachiw confirmed that the meeting will be with representatives from Harford County, along with the RAB, Environmental Protection Agency (EPA) and Maryland Department of the Environment (MDE). The meeting will provide an opportunity to brainstorm ideas regarding perchlorate issues such as potential source locations and possible future actions.

Mr. Frank Vavra (EPA) suggested that the perchlorate detections be reported to a certainty of only one decimal place. Mr. Stachiw stated that the lab reports the results to two decimal places. Mr. Stachiw will contact the lab to discuss the level of certainty used in reporting perchlorate detections.

After confirming the RAB Members had no further comments, Mr. Stachiw introduced Mr. Billy Sanders (U.S. Army Corps of Engineers (USACE) Environmental Remediation Resident Office (ERRO)) to provide the Lauderick Creek Chemical Warfare Materiel (CWM) Removal Action Update.

IV. LAUDERICK CREEK CWM REMOVAL ACTION UPDATE

Mr. Sanders reported that a total of 16,324 anomalies have been identified, with 487 anomalies identified since the 27 March 2003 RAB meeting. Six 4.2" and one 81-millimeter (mm) mortars were investigated since the March RAB meeting. Two of the 4.2" mortars were determined to be liquid-filled and were transported off-site to undergo Portable Isotopic Neutron Spectroscopy (PINS) evaluation. One 4.2" mortar and the 81-mm mortar were determined to be high explosive and transported off-site for destruction. The remaining 4.2" mortars were found to contain white phosphorus (WP).

Mr. Greg Kappler (RAB Member, various committees) asked for confirmation that no CWM was discovered during the Lauderick Creek Removal Action. Mr. Sanders stated that all suspect liquid-filled munitions will be assessed on 10 May 2003, including the remaining anomalies that need to be excavated. To date, no munitions have been assessed and determined to contain CWM.

Mr. Sanders displayed an updated Summary of Liquid Filled Munitions from the Lauderick Creek CWM Removal Action project was provided. Several items are awaiting destruction and six liquid-filled munitions are awaiting assessment. The items awaiting destruction are scheduled for PINS evaluation on 10 May 2003. Mr. Sanders explained that the destruction and assessment process has slowed due to construction activities and personnel deployments.

Mr. Sanders displayed a map showing a total of 535 completed grids, with 16 grids completed since the March RAB meeting. Approximately 100 anomalies in five grids remain to be evaluated. The remaining grids are located in a swamp area near Area 1, and in Area 9.

Mr. Sanders reported that Removal Action operations should be completed, weather permitting, by the beginning of May 2003. After the completion of operations, Grid G-99 will be revisited and several other grids will be resurveyed. Mr. Stachiw stated that, after Removal Action operations are completed, volunteers from the RAB will be chosen to help determine which grids should be resurveyed.

Mr. Sanders stated that, due to the discovery of a high explosive 4.2" mortar, barricades will be required during excavation operations in Area 1. The barricades are currently being used during operations in Area 9. Other issues for the project include a high turnover of personnel as a result of deployments. Training must be administered for any new personnel.

Dr. Cal Baier-Anderson (University of Maryland, TAG Consultant) reiterated her request for a detailed, color-coded grid map showing the number and location of rounds removed during the Removal Action. Mr. Sanders responded that he would coordinate with Mr. Dan Wheeler (contractor for Directorate of Installation Operations (DIO)) and provide a map to the RAB Members upon completion.

After confirming the RAB Members had no further comments, Mr. Stachiw introduced Mr. Robert Carestia (Explosive Destruction System (EDS) System Manager, Non-Stockpile Chemical Materiel (NSCM)) to provide an update on the EDS.

V. EXPLOSIVE DESTRUCTION SYSTEM UPDATE

Mr. Carestia displayed photographs of the three EDS systems that are currently operational including the EDS Phase 1 Unit 1 and EDS Phase 1 Units 2 and 3. Phase 1 Unit 1, the first EDS produced by Sandia National Labs for the NSCM program, completed intensive developmental and operational testing in 2000. The EDS Phase 1 Units 2 and 3 are identical in configuration and incorporate improvements on the Phase 1 Unit 1 system. One of the major differences between these twin units and the earlier Unit 1 is their rotational mixing configuration. Phase 1 Unit 1 employed an oscillating or rocking mixing configuration.

Mr. Stachiw asked if all of the units were currently located at APG. Mr. Carestia responded that the Phase 1 units are located at APG, but the Phase 1 Unit 2 or 3 will be deployed to Spring Valley in Washington, D.C. in the upcoming months.

Mr. Carestia reported that the Phase 1 Units 2 and 3 underwent operational testing at APG during the Spring and Summer of 2002 and December 2002, destroying a total of 11 munitions. Rounds destroyed included one phosgene (CG) bottle, two mustard (HD) bottles, seven water-filled 4.2" Simulated Equipment Test Hardware (SETH) mortars, one suspect HD stokes mortar, and one water-filled bottle. Based on the units' early success, the Army Materiel Systems Analysis Activity (AMSAA), an independent evaluator in the EDS acquisition program, granted all Phase I EDS units (i.e., Units 1, 2 & 3)

provisional operational status in the Fall of 2002. As a means of ensuring adequate crew training and the long-term reliability and supportability of the EDS, the AMSAA mandated Follow-on Test and Evaluation (FOT&E) of the Phase 1 units 2 and 3.

Mr. Carestia stated that the EDS Phase 1 Unit 2 completed a major portion of required FOT&E between February and April 2003, destroying 18 suspect chemical munitions. Munitions destroyed included 15 suspect HD 75-mm projectiles, one suspect HD 8" livens projectile, one suspect sarin (GB) bomblet, and one suspect CG 4" mortar. Only one of the 18 items destroyed during the FOT&E was found to contain chemical agent.

Mr. Stachiw asked which item was found to contain chemical fill. Mr. Carestia stated that one of the suspect HD 75-mm projectiles was confirmed to contain some quantity of HD. This was based on low-levels of HD detected in the 2-hour, post detonation sample for this item. When asked as to shy PINS was not able to do a better job detecting chemical agent, Mr. Carestia explained that he was unsure and deferred to Mr. Andy Murphy (DSHE Hazardous Waste Branch). Mr. Murphy explained that a PINS analysis identifies individual elements that are associated with a specific suspect fill. This is in contrast to other analytical methods such as gas chromatography and mass spectrometry that identify entire chemical groupings making positive identification of a chemical compound much easier. As an example, chlorine and sulfur are noted as "key" elements in the identification of mustard compounds. The Army Materiel Assessment Review Board (MARB) therefore looks at the ratio of chlorine, sulfur, and other common elements from a PINS analysis to see if it matches a typical pre-identified signature that the technology has already seen. If a clear match is made, the MARB will note that the item is very likely mustard. If, however, only chlorine is seen (as was the case with most of the suspect mustard items recently destroyed), the MARB notes that at least one "key" element associated with mustard was seen; therefore, to be safe, the item should be considered as possibly containing chemical warfare material.

Mr. Kappler asked for the concentration of the HD found in the 75-mm round. Mr. Murphy explained that the presence of mustard in the one 75-mm round was determined during post-detonation sampling of the air space inside the EDS vessel after some level of decontamination had taken place; therefore, the precise pre-detonation concentration is not known. The concentration of mustard seen in the 2-hour post-detonation sample was very low, perhaps in the single digit parts per million (ppm) range.

Mr. Stachiw asked what the liquid-fill was determined to be for the remainder of the suspected CWM-filled munitions. Mr. Murphy explained that the results from the first few items were found to contain aqueous liquid with elevated chloride levels that would be consistent with brackish water. Low levels of chlorinated solvents were also seen in early analyses. As noted previously, the chlorine detected by the PINS was the MARB's rationale for considering these items as possibly containing mustard agent.

Mr. Carestia reported that after government reorganization, the U.S. Army Solider and Biological Chemical Command (SBCCOM) has been changed to the Chemical Materials Agency (CMA). The Program Manager for Chemical Demilitarization (PMCD) has become the Program Manager for Elimination of Chemical Weapons (PM ECW).

Mr. Carestia informed the RAB Members that the EDS Phase 1 Unit 2 or 3 will next be deployed to Spring Valley in Washington, D.C. for destruction operations in support of Corps of Engineers CWM removal operations.

Mr. Carestia stated that the EDS Phase 2 Unit 1, a larger version of the Phase 1 systems, is currently undergoing testing in the United Kingdom. The Phase 2 Unit 1 will be moved to APG during the late summer of 2003 for some additional testing. At the completion of the testing, all AMSAA requirements will be met for the Phase 2 Unit 1.

Mr. Stachiw asked for an explanation of AMSAA requirements. Mr. Carestia stated that the AMSAA is an independent evaluator of the EDS units. AMSAA sets certain criteria that must be met before the units can be made operational. Mr. David Hoffman (NSCM) added that AMSAA evaluates the number of munitions destroyed, procedures, and crew training. The Phase I Unit 1 was required to destroy approximately 20 munitions, while the Phase 2 Units 2 and 3 are required to destroy approximately 45 munitions.

Mr. Kappler asked if the liquid-filled munitions found during the Lauderick Creek Removal Action would be used as part of the FOT&E for the Phase 2 Unit 1 EDS. Mr. Hoffman explained that if the munitions were determined to be chemical-filled after a PINS evaluation, the munitions could be used in the FOT&E for the Phase 2 Unit 1 EDS. Mr. Murphy added that the field operations of the EDS over the past three months destroyed all MARB-evaluated suspect chemical munitions from the N-Field bunker.

Mr. Kappler questioned if the AMSAA requirements mandated that a certain number of each type of munition must be destroyed before the system is declared operational. Mr. Hoffman stated that he could come back to a future RAB meeting to provide a detailed briefing on AMSAA requirements, or a copy of the requirements could be made available to the RAB Members. Mr. Hoffman added that AMSAA does require a certain number of each type of munition to be destroyed, but if certain munition types are not available others may be tested instead. Mr. Hoffman stated that AMSAA is also required to make a report to Congress that the EDS units are operational and that the units have met all requirements for testing.

Dr. Baier-Anderson recalled a removal action at a site at APG in which a large number of munitions were being removed, resulting in the N-Field bunker being filled and removal action operations ceasing. Dr. Baier-Anderson questioned if removal action operations will resume at the site due to the N-Field bunker being cleared out from the EDS testing. Mr. Stachiw explained that the site was Kings Creek, and an investigation will be completed to determine if removal action operations will resume.

After confirming the RAB Members had no further comments, Mr. Stachiw provided an update on the Kings Creek Time-Critical Removal Action.

VI. KINGS CREEK TIME-CRITICAL REMOVAL ACTION

Mr. Stachiw reported that erosion along the shoreline of Kings Creek in the Bush River Study Area has exposed a variety of waste such as slabs and glassware. A time-critical removal action for the area has been initiated to remove the waste and stabilize the shoreline. A fact sheet detailing the removal action will be distributed to the RAB Members upon completion. Mr. Stachiw added that Mr. Don Green (DSHE ECRD Project Officer) is scheduled to provide an update on the Bush River Study Area at the May 2003 RAB Meeting, and more detailed information about the removal action will be provided.

Mr. Vavra informed the RAB Members that he was able to visit the removal action site. Mr. Vavra reported that as waste was being removed, more waste was being discovered. The waste seemed to be spreading out rather than coming to an end. Mr. Vavra stated that a question remains as to how large the removal action will be.

Mr. Kappler questioned the approximate size of the removal action area. Dr. Baier-Anderson, who also visited the site, explained that the area was approximately six to seven feet wide and approximately four feet deep. Dr. Baier-Anderson stated that much of the waste was intertwined with the root mat, making removal operations difficult. Mr. Kappler asked if the bottles that were found were broken, and asked how much waste was located at the site. Dr. Baier-Anderson stated that some bottles appeared to be

water-filled, while others were broken. Mr. Vavra stated that some bottles appeared to contain a white powder, and Dr. Baier-Anderson added that some appeared to be filled with blue liquid. Dr. Baier-Anderson reported that 33 items were removed at the site on 24 April 2003.

Mr. Kappler asked what types of facilities were located in the Kings Creek area in the past. Mr. Stachiw explained that in the past the site was close to several landfill areas, chemical demilitarization stockpiles, and a RAD yard.

After confirming the RAB Members had no further comments, Mr. Stachiw introduced Mr. John Wrobel (DSHE ECRD Project Officer) to provide an update on the Canal Creek Study Area.

VII. CANAL CREEK STUDY AREA UPDATE

Mr. Wrobel displayed a graphic depicting Earth Day activities at Harford Community College. Mr. Wrobel and several volunteers planted a butterfly garden. A green garden was also planted around a parking lot to reduce runoff potential.

East Branch Canal Creek Study Area

Mr. Wrobel reported that the groundwater treatment plant (GWTP) is designed to meet drinking water standards. The plant has the capacity to treat about 440,000 gallons of water per day. The long-term goal is to incorporate the GWTP effluent as part of the Edgewood Area drinking water system.

Mr. Wrobel displayed a flow chart representing the Canal Creek GWTP configuration. The water flows from the groundwater extraction wells to the treatment plant. The first steps involve precipitation of metals, mostly iron. The precipitated metals, about 100 pounds per day, will be classified as non-hazardous waste, and sent off site for disposal. The remaining water flow will undergo Volatile Organic Compound (VOC) removal by resin adsorption. The resin, called Ambersorb® is a uniform, fine-grained material. An advantage to the Ambersorb®, is that it can be regenerated on site and cleaned by running steam through it. The vapor phase VOCs that are generated during the steam regeneration process then are run through a vapor phase granulated activated carbon (GAC) treatment; approximately 1.6 pounds of VOC are removed per day during this process. After this step, there are no VOC air emissions. The final step involves discharging the treated water into the East Branch Canal Creek (EBCC) at less than 0.4 pound VOCs per day. Mr. Wrobel displayed several photographs of the treatment plant.

Mr. Wrobel stated that the goal of the GWTP extraction system was to startup the eight extraction wells sequentially over a three-week period. During startup, well capacity and efficiency through aquifer pump tests will be determined. The groundwater capture zone around the well field will be monitored through water-level measurements. The impact of the discharge on stream flow and aquifer recharge will be assessed through stream-level measurements. Concentration changes of VOCs in groundwater will be monitored in response to pumping.

Mr. Wrobel displayed photographs depicting stream flow measurements and the GWTP effluent discharge location. Mr. Kappler asked how many gallons per minute of effluent is discharged from the GWTP. Mr. Joe Kendall (Weston Solutions, Inc.) stated that the discharge is approximately 160 gallons per minute.

Mr. Wrobel reported that Extraction Well 5 (EW5) was redeveloped because it performed poorly during pre-testing. The well was originally not sufficiently developed. The redevelopment greatly increased the specific capacity of the well. Well EW5 may need to be redeveloped on an annual or semiannual basis if its specific capacity decreases over time.

Mr. Wrobel stated that troubleshooting for the GWTP influent and effluent tanks detected elevated readings of organic compounds in the headspace of the carbon from the vapor extraction system from the effluent tank on 20 April 2003. The Flame Ionization Detector/Photoionization Detector (FID/PID), FID with carbon trap and Draeger tubes were run on the headspace of the influent/effluent tanks, extraction wells, and throughout the extraction system. FID levels were high and PID levels were low in both the influent and effluent tanks. Grab air samples were collected on 22 April 2003, with results revealing the presence of methane. As a result of the methane detection, the treatment plant was shut-down on 20 April 2003, and restarted on 22 April 2003. The effluent water VOC concentrations were non-detect, while influent water concentrations were at expected levels of chlorinated VOCs that would not cause elevated headspace readings. Sampling results indicated that methane, not VOCs, is responsible for elevated vapor organics. Methane most likely originates from the aquifer, with wells EW-8 and EW-3 possibly contributing to methane concentrations.

Mr. Wrobel displayed a slide depicting the location of the extraction wells and the GWTP. Mr. Stachiw asked if any of the wells were located near a landfill. Mr. Wrobel stated that the landfill is along the East Branch of Canal Creek. No evidence indicates any influence from the landfill on the extraction wells.

Mr. Karl Kalbacher (MDE) asked if sampling would be completed to measure dissolved oxygen. Mr. Wrobel stated that the effluent will be sampled for dissolved oxygen. Mr. Wrobel added that a discussion will be held with MDE regarding sampling frequencies. The methane present in the vapor phase is at very low levels, below the standards listed for landfills.

Mr. Wrobel displayed a graphic depicting the GWTP start up program. Step tests were completed for each extraction well. Tests were completed at each extraction well at 100-minute intervals at a specified flow rate. Wells throughout the aquifer were sampled in conjunction with the step tests to observe changes in the aquifer.

Ms. Grochowski asked if ongoing monitoring for methane is being completed. She expressed concern that an increase in flow rate would result in an increased level of methane. Mr. Wrobel stated that the methane will be monitored. A meeting has been scheduled with the contractor to discuss the equipment needed and the frequency of monitoring.

Mr. Kappler asked how many hours each day the GWTP is running. Mr. Wrobel stated that the plant is operational 24 hours a day. The plant is manned for 10 hours each day, and is monitored remotely during unmanned hours. Ms. Grochowski asked if there is a backup system available. Mr. Wrobel reported that the plant is equipped with emergency generators.

Mr. Stachiw questioned if any methane was detected during operations at the old water treatment plant. Mr. Wrobel stated he was unsure if the old plant monitored for methane, and research would be completed to determine if methane was detected in the past.

Mr. Wrobel reported that the GWTP and extraction system were started in April 2003. Short-term monitoring of the extraction system will be initiated in May 2003 to collect regular water levels to monitor the hydraulic containment of the plume. The first biannual sampling of the monitoring wells surrounding the extraction wells will be conducted in July 2003. An evaluation of the start-up and short-term monitoring data will be completed from July to December 2003 to develop a comprehensive long-term monitoring plan. A second biannual sampling event will be conducted in January 2004, with implementation of the long-term monitoring plan being conducted in March and April 2004.

Mr. Kappler asked if a National Pollutant Discharge Elimination System (NPDES) permit was required for the GWTP. Mr. Wrobel stated that no permit was required because the GWTP is a CERCLA operation, but a NPDES equivalency was completed with the State. Mr. Kappler asked what is required for monitoring for the discharge monitoring reports. Mr. Kendall stated that the monitoring report includes parameters such as dissolved oxygen, pH, temperature, and VOC concentrations. Mr. Wrobel stated that a complete list of monitoring report requirements will be compiled and provided to the RAB Members.

Mr. Wrobel stated that through the Army's Sustainable Project Rating Tool (SPiRiT), the Canal Creek GWTP is eligible for gold certification. The GWTP's gold certification features include: environmental responsibility in construction; the adaptive re-use of an existing building incorporating the sustainable design principles established by the Department of Defense (DOD) and the General Services Administration (GSA); and the demonstrated environmentally and fiscally responsible use of resources in design, construction, and operations.

West Branch Canal Creek Study Area

Mr. Wrobel displayed a graphic depicting the sampling locations for the 2002 investigation of shallow groundwater seeps in the West Branch of Canal Creek. A graphic was also displayed showing a schematic of preferential discharge through seeps from two different dominant landscape locations.

Mr. Wrobel reported that the seep investigation characterized a total of 28 seep sites in four regions. The temperature gradient was verified, and the shallow groundwater was sampled using passive diffusion samplers. Surface water samples were also collected at each groundwater sampling location. The samples were analyzed for VOCs and methane.

Mr. Wrobel displayed pictures of several seep locations. Seep location Site 3-2E is located on the east side of the creek, 60 feet upstream of the floating walkways of the 'A' transect. The 3-2E seep is approximately 20 feet long and 5 feet wide. Site 3-4W is located on the west side, 30 feet downstream of site HP03. The suspected seep 3-4W measures approximately 5 feet by 6 feet. Seep Site 3-3E is located on the east side of the stream.

Mr. Wrobel displayed a chart showing the Spring 2002 passive diffusion sampler results. The sampling detected several VOCs including vinyl chloride (VC), trans-1,2-dichloroethene (trans-DCE), 1,1,2,2-tetrachloroethane (1,1,2,2-TeCA), cis-1,2-dichloroethene (cis-1,2-DCE), 1,2-dichloroethane (1,2-DCA), chloroform (CF), carbon tetrachloride (CT), tetrachloroethene (PCE), trichloroethene (TCE), and methylene chloride (MC).

Dr. Baier-Anderson expressed concern over the high concentrations of VOCs detected at seep location 3-4W. Dr. Baier-Anderson questioned if a source area exists in the Westwood Study Area resulting in a seep location on the west side of the creek. Mr. Stachiw stated that a meeting will be scheduled with Ms. Cindy Powels (DSHE ECRD Project Officer) to discuss the possibility of a source area in the Westwood Study Area. Mr. Wrobel stated that the CF and CT may be present due to tear gas plants having discharge lines into the creek. The CF or CT was used to alleviate blockages in the discharge lines from the tear gas plants.

Mr. Wrobel reported that the thermal infrared survey was repeated in February 2003. The survey verified seep locations that were consistent with the 2002 survey. Mr. Wrobel displayed aerial photographs showing Seep 3-4W in the Winter 2002 and Winter 2003.

Mr. Wrobel stated that a design data gap investigation will continue through the Spring 2003. Several seep locations were designated as candidates for pilot test sites for further delineation. Those sites include seep sites 2-3E, 2-7W, 3-1E, 3-4W, 3-5E, and 3-7E. The discharge area will be bounded, and an impact area will be estimated. Creek bottom sediment delineation will also be completed. Passive diffusion samplers will be deployed and recovered, with samples being analyzed for VOCs.

Mr. Wrobel reported that the Summer 2003 data gap investigation will involve a focused characterization of the selected pilot test sites, and a baseline. The characterization will include hydrologic and physical properties of sediments (seepage meters, lithologic descriptions, soil properties analysis), chemical properties of water (VOCs, redox), and microbial properties of sediment (community comparison).

Mr. Wrobel informed the RAB Members that an enhanced bioremediation study will be completed for the West Branch Canal Creek Study Area using bench tests to determine the best combination of biostimulation and bioaugmentation techniques or degradation of VOCs. Potential bioaugmentation options include a planned installation of thin, enhanced peat anchored on surface (biomats), and subsurface injection into existing peat. The flow-through column tests for biomats will be completed in 2003. Sediment cores will be collected from seep sites, and discharge rates and concentrations similar to field conditions will be established. The most promising material mixtures in sequence with the sediments will be evaluated. Measurements during the tests include VOCs, redox, culture behavior, and hydraulic properties.

Mr. Wrobel stated that under the enhanced bioremediation study, field tests of potential seep treatments will be completed in fiscal year (FY) 2004 and 2005. A graphic was displayed showing comparison line graphs of concentration vs. depth. The line graphs were presented for the biomat option and the subsurface injection into existing peat. To develop biomats, bench tests must be conducted to evaluate degradation, sorption, and bioaugmentation on select mixtures. An evaluation is made on the hydraulic, physical, and chemical properties of seep sites and of mat materials. Lastly the general design framework and potential mat materials are identified.

Mr. Wrobel reported that the Environmental Protection Agency (EPA) Environmental Response Team (ERT) is conducting an ecological risk assessment (ERA) for the Canal Creek sediments. A total of 85 samples were collected in October 2002 including fish tissue samples from 15 locations (1,215 fish), 38 sediment samples, 26 surface water samples, and six soil samples. The toxicity tests failed due to failure of the control sample organisms. The toxicity tests are being repeated at the cost of the laboratory. The sampling event found limited metals detections, but numerous tentatively identified compounds (TIC) detections. Elevated arsenic levels were found in the DM Filling Plant soils at concentrations ranging from 7.3 to 370 ppm.

Mr. Kappler expressed concern over risks to the environment resulting from the high concentrations of CF and CT detected at seep location 3-4W. Mr. Wrobel explained that the ERT sampling will support an ecological risk assessment for the area. The risk assessment is a lengthy process consisting of seven steps that must be completed. A human health risk assessment is less involved and will also be completed for the area.

Mr. Kalbacher asked if the surface water data collected during the seep investigation was compared to the National Oceanic and Atmospheric Administration action levels (if available) for the detected compounds. Ms. Emily Majcher (US Geological Survey (USGS)) stated that the results were compared to the EPA Biological Technical Assistance Group (BTAG) criteria and other eco-benchmarks. Some parameters exceeded comparison criteria, while others were below comparison criteria. No pattern of exceedances was evident.

G-Street Salvage Yard, Railroad Yard, DM Filling Plant

Mr. Wrobel displayed a map showing the general locations of the G-Street Salvage Yard, Railroad Yard, and DM Filling Plant. The G-Street Salvage Yard was active from the 1940s to the late 1960s. The salvage yard received metals and wastes from the O-Field and J-Field Study Areas. The Burn Residue Disposal Area (BRDA) was a disposal site used for burning residue associated with metal salvage recovery operations. Solvents were burned at the Fire Training Area, resulting in groundwater contamination. Metals contamination in the Soil Operable Unit was a result of recycling efforts that were completed in the area.

Mr. Wrobel reported that previous removal actions and investigations completed at the three sites included a 1990 removal action, 1991 fence installation, 1996 emergency measures action to install a sand cap, and a 1998 geophysical survey to identify subsurface anomalies. Mr. Wrobel displayed photographs of the 1990 removal action activities. Several items were recovered during the 1990 removal action including bomblets in ash residue, and a glass vial with small amount of VX contaminated liquid. The items recovered resulted in the installation of a security fence around the area in 1991.

Mr. Wrobel informed the RAB Members that a removal action was completed in 1996 to remove from the site additional waste that had been discovered as a result of erosion. Items recovered during removal action operations included projectiles (75mm white phosphorus and 105mm high explosive projectiles), fuses (including an armed bomb fuse), plastic and chemical bomblets, plastic and aluminum grenades, rifle grenades, 2.75-inch rocket warhead, pyrotechnic flare, and a 2.36-inch anti-tank rocket.

Mr. Kappler asked for an explanation of the plastic and chemical bomblets. Mr. Wrobel explained that the bomblets were manufactured in different configurations, with some being configured of plastic, and some with chemical fill. Mr. Wrobel added that testing results completed on the recovered items found no CWM-filled munitions. Mr. Kappler asked how the bomblets were disposed. Mr. Wrobel explained that some items were sent off-site as scrap waste, but any item determined to be armed was disposed of at the Robbins Point open detonation area.

Mr. Wrobel stated that a 1996 temporary sand cap was constructed over the site to reduce the erosion in the area. Subsidence and erosion were discovered in the cap, and no subsurface barrier was installed to prevent animal intrusion. In 1998, a geophysical survey was completed of the BRDA, indicating large geophysical anomalies under the cap and extending beyond the current boundary of the temporary sand cover. There is a potential for the existence of unexploded ordnance (UXO) and CWM at the BRDA.

Mr. Wrobel reported that planned activities for FY03 at G-Street include completion of a ground penetrating radar survey, and an Engineering Evaluation/Cost Analysis (EE/CA) and public comment period. Upon approval of the EE/CA, field activities will begin on the west face of the BRDA.

Mr. Kappler asked if any special precautions need to be taken during the planned removal activities at the BRDA due to the discovery of VX. Mr. Wrobel explained a request for proposal for removal action operations was sent out to contractors. After receiving proposals from the contractors, the bids will be reviewed and discussed with the Safety Officer to determine the safest, most effective way to complete the removal action. Mr. Stachiw added that the proposed removal action operations will be presented to the RAB Members for review and comment before field activities commence.

Mr. Wrobel reported that planned activities for FY04 include completion of the investigative activities at the west face of the BRDA. In the event that no CWM is present in the west face, field activities will proceed with a modified Health and Safety Plan (HASP) for the remainder of the site, with continuing

safety reviews. If CWM is identified in the west face, an evaluation will be made to either continue operations or develop an alternative action.

Building E5185

Mr. Wrobel informed the RAB Members that Building E5185 was historically used as a WWII mustard munition filling plant. Historically, 20,000-gallon steel tanks were believed to reside below the building in a concrete vault. A 5,000-gallon liquid level tank was identified on a drawing of the building. Infrared thermographic investigation techniques were used on site and determined the likely presence of two tanks. A tank investigation was completed in October 2002. The objective of the tank investigation was to determine the contents of the tanks. Health and safety precautions were taken and contingency plans were in place during the investigation. Results of the investigation did not indicate any tanks below the building.

Mr. Wrobel displayed a graphic depicting the cross-sectional view of the work area for the Building E5185 tank investigation. All checks for CWM were negative, and one unknown tank was located during the investigation. The tank was determined to be a condensate tank and was removed. The suspected tanks below the building were not found.

Mr. Wrobel displayed slides depicting the preliminary 3D mustard tank model. The graphics were representative of the tank vault dimensions, tank dimensions, and soil boring locations that were completed.

Building 99

Mr. Wrobel reported that test pits confirmed that underground vaults do not exist at Building 99. Installation of seven direct push technology wells is in progress at various locations across the Building 99 site. Existing monitoring wells will be sampled and analyzed for pentaerythritol tetranitrate (PETN), using a modified full explosives analytical suite.

Planned Activities

Mr. Wrobel informed the RAB Members that planned FY03 activities for the Canal Creek Study Area include the start-up of the East Branch GWTP, additional remedial investigation at Building 99, a biomat evaluation at the West Branch Canal Creek, additional sampling of West Branch sediments, continued monitoring at Building 103 and Beach Point (reevaluation to be completed during the next Five Year Review), potential removal action at the BRDA, and award of Remedial Investigation/Feasibility Study for the Building E5188 Area.

VIII. INTERMISSION

At 8:55 p.m., upon completion of the Canal Creek Update, Mr. Stachiw announced a brief intermission. At 9:05 p.m., the meeting resumed, with a closed-door session to allow RAB Members to continue the discussion of Operations Security issues with Mr. Joe Kaffl (Operations Security (OPSEC)).

IX. OPERATIONS SECURITY DISCUSSION

A closed-door meeting was held with Mr. Kaffl to discuss outstanding OPSEC issues. To review a copy of the OPSEC meeting summary, please contact Mr. Stachiw or Ms. Karen Jobes (410-436-3320).

X. CLOSING REMARKS

At 10:45 pm, after confirming that no one present had further questions, Mr. Stachiw adjourned the meeting. The next APG IRP RAB Meeting will be held on Thursday, 29 May 2003 at 7:00 pm in the Edgewood Senior Center. The tentative topics for discussion are the Lauderick Creek CWM Removal Action, the Lauderick Creek Study Area update, and the Bush River Study Area update.